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Nalco Docket No. 7773

Customer No. 49459

**In the United States Patent and Trademark Office**

Applicants: Michael R. St. John et al. ) Examiner: Dennis R. Cordray  
Serial No.: 10/764,935 ) Group Art Unit: 1791  
Date Filed: January 26, 2004 )

For: METHOD OF USING ALDEHYDE-FUNCTIONALIZED POLYMERS TO ENHANCE  
PAPER MACHINE DEWATERING

**DECLARATION OF MICHAEL R. ST. JOHN UNDER 37 C.F.R. § 1.132**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Michael R. St. John declares that:

1. He is a co-inventor of U.S. Patent Application Serial No. 10/764,935, entitled "METHOD OF USING ALDEHYDE-FUNCTIONALIZED POLYMERS TO ENHANCE PAPER MACHINE DEWATERING," which was filed on January 26, 2004 and is now pending.
2. He attended and graduated from University of Wisconsin, Madison, receiving a B.S. degree in chemistry; University of California, Berkeley, receiving a Ph.D. degree in physical chemistry; and University of Chicago as a postdoctoral fellow.
3. He is currently employed as a Research Associate in the Pulp & Paper Research department at Nalco Company and that his employment with Nalco Company began in August of 1983. Prior to that date, he was employed at Institute of Gas Technology where he was Principal Scientist of Solar and Electrochemical Research. Prior to his employment at Institute of Gas Technology, he was employed by University of Wisconsin, Milwaukee as lecturer. He has a total of 20 years experience in paper applications.
4. He has read and understood the above captioned patent application and the pending Office Action dated December 28, 2007.
5. He further declares that testing data indicated that press dewatering improved when comparing reacted glyoxal to polymer ratios of 0.12 to 0.20. This result alone is unexpected as Cosia indicates no further activity improvements are observed above 0.12. To investigate the level of glyoxalation further, a polymer was prepared with mole ratio

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of total reacted glyoxal to AcAm of 0.26. Table 1 shows further unexpected improvement in press dewatering achieved with this polymer compared to a value of 0.20 (shown as percent solids increase). A percentage point improvement as observed has huge commercial significance as the lower amount of water going to the thermal drying section of the papermachine is reduced and leads to either increased paper production or increased energy savings, whichever is desired. Coscia specifically and unequivocally teaches that no improvement is achieved at levels of reacted glyoxal greater than 0.12, which makes the results below completely unexpected. In addition, Coscia in no way suggests that any type of functionalized polymer would have such a profound effect on press dewatering.

6. Table 1

Dose (lb/ton)	0.20 Mole Ratio total reacted glyoxal/AcAm	0.26 Mole Ratio total reacted glyoxal/AcAm
0.0	20.76	20.76
0.0	20.94	20.94
0.5	21.74	22.44
1.0	21.96	22.49
1.5	22.39	23.12

7. Michael R. St. John declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements and the like may jeopardize the validity of the present application or any patent issuing thereon.

Dated: 27-Mar-08Signed: Michael R. St. John  
Michael R. St. John